

PATENT SPECIFICATION

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(54) IMPROVEMENTS IN OR RELATING TO THE GUIDANCE OF FOIL STRIPS

(71) We, SIEMENS AKTIENGESELLSCHAFT, a German Company of Berlin and Munich, German Federal Republic, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to the guidance of travelling metal foil strips by means of roller systems, in particular of an aluminium foil strip for use in electrolytic capacitors.

When foil strips are guided by means of roller systems such as are used, for example, in the processing of aluminium foil strip for subsequent use in electrolytic capacitors, through etching and forming baths, creases frequently form in the strip, particularly in the case of soft-annealed aluminium foils. The formation of such creases cannot be avoided with conventional systems.

It is an object of the present invention to provide a method for guiding a travelling metal foil strip by means of a roller system, in particular an aluminium foil strip for use in electrolytic capacitors, in which the formation of creases in the strip is substantially avoided.

According to the invention, there is provided a method of guiding a travelling metal foil strip by means of a roller system without substantial formation of creases in the strip, wherein the strip is guided by passage over a roller or rollers, the surface of the or each roller having a substantially rhomboidal pattern provided by a respective tubular net covering the surface of the or each said roller.

The invention will now be further described with reference to the drawing, in which:—

Figure 1 is a schematic perspective view of a roller in use in a process in accordance with the invention; and

Figure 2 is a schematic end view of one form of the roller shown in Figure 1.

Referring to Figure 1, a guide roller 1

having journals 2 and 3 is provided on its surface with a raised rhomboidal pattern 4. An aluminium foil strip 5 which is guided across the roller 1 in the direction of the arrow and may have, for example, a corrugated edge 6, as illustrated, before its guidance over the roller 1, is completely creaseless after it has left the roller 1. As can be seen from Figure 1, after it has left the roller 1, the aluminium foil 5 has a slightly impressed overall rhomboidal pattern 7 which can only be distinguished in reflected light and which does not in any way interfere with the further processing of the foil strip.

As shown in Figure 2 the "raised" rhomboidal pattern on the surface of the guide roller 1 is obtained by covering the surface of the roller 1 with a tubular net, the individual threads 8 of which are shown in Figure 2. The net threads 8 may consist, for example, of polyethylene, polypropylene, or other synthetic resin material, and have a ratio of thread diameter to mesh aperture of from 1:5 to 1:20. Preferably, the thread diameter is about 1.6 mm, and the mesh aperture is about 16 mm.

In particular, the method of the invention allows aluminium foil strips to be guided in a substantially creaseless manner, even if the foils are already supplied in a corrugated shape produced during their manufacture.

WHAT WE CLAIM IS:—

1. A method of guiding a travelling metal foil strip by means of a roller system without substantial formation of creases in the strip, wherein the strip is guided by passage over a roller or rollers, the surface of the or each roller having a substantially rhomboidal pattern provided by a respective tubular net covering the surface of the or each said roller.

2. A method as claimed, in Claim 1, wherein the or each tubular net is made of synthetic resin material.

3. A method as claimed in Claim 1 or Claim 2, wherein the ratio of the thread

diameter of the or each said net to the mesh aperture thereof is from 1:5 to 1:20.

4. A method as claimed in Claim 3, wherein the thread diameter of the or each said net is about 1.6 mm and the mesh aperture is about 16 mm.

5. A method as claimed in any one of the preceding Claims, wherein said foil strip is of aluminium.

10 6. A method of guiding a travelling metal foil strip by means of a roller system substantially as hereinbefore described with reference to Figure 1, and Figure 2 of the drawing.

15 7. Apparatus for carrying out a method as claimed in Claim 1, comprising at least one roller, the surface of which has a substantially rhomboidal pattern provided by a tubular net covering the roller surface, and means for passing a metal foil strip over said roller or rollers.

8. Apparatus as claimed in Claim 7, wherein the or each said tubular net is made of synthetic resin material.

9. Apparatus as claimed in Claim 7 or Claim 8, wherein the ratio of the thread diameter of the or each said tubular net to the mesh aperture thereof is from 1:5 to 1:20.

10. Apparatus as claimed in Claim 9, wherein the thread diameter of the or each said tubular net is about 1.6 mm and its mesh aperture is about 16 mm.

11. Apparatus for carrying out a process as claimed in Claim 1 substantially as hereinbefore described with reference to Figure 1, and Figure 2 of the drawing.

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COMPLETE SPECIFICATION

1 SHEET

*This drawing is a reproduction of
the Original on a reduced scale*

Fig.1

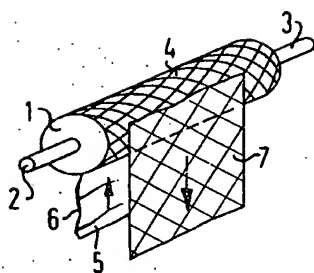
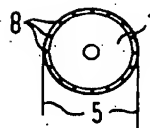


Fig.2



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